We claim:

1. An apparatus for determining an error ratio of individual channels of a WDM optical signal, comprising:

a wavelength-selective filter for separating the individual channels of the WDM signal;

a measurement circuit for measuring an error ratio of one channel using a first decision threshold level, the measurement circuit being operable to cycle through all channels, taking an error ratio measurement for each channel in sequence with a predetermined decision threshold level; and

control circuitry for altering the decision threshold level for successive cycles of the measurement circuit.

2. Apparatus according to claim 1, further comprising an error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount.

3. Apparatus according to claim 1, wherein the measurement circuit measures an error ratio by monitoring the channel with the applied decision threshold level for a predetermined time period, which time period is constant for all channels and for all decision threshold levels.

4. A method of determining the Q-factor of individual channels of a WDM optical signal, comprising the steps of:

(i) separating the individual channels of the WDM signal;

(ii) measuring an error ratio of each channel in turn using a first decision threshold level;

(iii) repeating step (ii) for different decision threshold levels until measurement levels for all decision threshold levels have been obtained for each channel.

5. A method according to claim 4, wherein in the measuring step, the channel is monitored with the applied decision threshold level for a predetermined time period, which time period is constant for all channels and for all decision threshold levels.

6. A method according to claim 4, wherein an error alarm is produced if an individual measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount.

7. A method according to claim 4, wherein the error ratio is obtained by comparing the measured signal using the applied decision threshold with the measured signal using a default decision threshold.

8. A method according to claim 4, wherein the error ratio is obtained by using a data structure embedded in the channel data.

9. A WDM optical communications network comprising a plurality of nodes, each node comprising an optical switching arrangement for performing routing of signals across the network, wherein the output path or paths of one or more nodes are provided with an apparatus for determining an error ratio of individual channels of the WDM optical signal, the apparatus comprising:

a wavelength-selective filter for separating the individual channels of the WDM signal;

a measurement circuit for measuring an error ratio of one channel using a first decision threshold level, the measurement circuit being operable to cycle through all channels, taking an error ratio measurement for each channel in sequence with a predetermined decision threshold level; and

control circuitry for altering the decision threshold level for successive cycles of the measurement circuit.

10. A network according to claim 9, further comprising an error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount.

11. A network according to claim 9, wherein the measurement circuit measures an error ratio by monitoring the channel with the applied decision threshold level for a predetermined

time period, which time period is constant for all channels and for all decision threshold levels.

12. A network according to claim 9, wherein each node is provided with an apparatus for determining an error ratio.

13. A network according to claim 9, wherein each node is further provided with optical spectrum analyzer.

14. A node for a WDM optical communications network, comprising an optical switching arrangement for performing routing of signals across the network, wherein the output path or paths of the node is provided with an apparatus for determining an error ratio of individual channels of the WDM optical signal, the apparatus comprising:

a wavelength-selective filter for separating the individual channels of the WDM signal;

a measurement circuit for measuring an error ratio of one channel using a first decision threshold level, the measurement circuit being operable to cycle through all channels, taking an error ratio measurement for each channel in sequence with a predetermined decision threshold level; and

control circuitry for altering the decision threshold level for successive cycles of the measurement circuit.

15. A node according to claim 14, wherein the measurement circuit measures an error ratio by monitoring the channel with the applied decision threshold level for a predetermined time period, which time period is constant for all channels and for all decision threshold levels.

16. A node according to claim 14, further comprising an error warning indicator which provides an error warning when a measured error ratio exceeds the expected error ratio for the particular decision threshold being applied by a predetermined amount.

17. A node according to claim 14, wherein the measurement circuit measures an error ratio by monitoring the channel with the applied decision threshold level for a predetermined

time period, which time period is constant for all channels and for all decision threshold levels.

18. A WDM optical communications network comprising a plurality of nodes and a plurality of amplifiers between the nodes, each node comprising an optical switching arrangement for performing routing of signals across the network, wherein each node is provided with an apparatus for determining the Q-factor of individual channels of the WDM optical signal, and wherein each optical amplifier is provided with optical spectrum analysis apparatus.

19. An apparatus for measuring the Q-value of an optical data channel comprising a first decision circuit having a first, variable, decision threshold and a second decision circuit having a second, constant, decision threshold, and an XOR element which provides an output pulse when a different decision is made by the first and second decision threshold circuits, wherein the output pulses are used to determine the error ratio for different first decision thresholds, and wherein the apparatus further comprises extrapolation circuitry for obtaining a Q-value from the error ratio values.

20. An apparatus according to claim 19, further comprising a clock recovery circuit for analysing the optical data channel, the clock recovery circuit output being used to drive the decision circuits.

21. An apparatus according to claim 20, wherein the clock recovery circuit obtains the bit rate of the optical data channel, such that the apparatus is bit rate independent.

22. A method of determining the Q-value of an optical data channel, comprising the steps of:

(i) measuring an error ratio using a first decision threshold level by comparing the measured signal using the first decision threshold with the measured signal using a default decision threshold, such that the error ratio measurement is independent of the protocol of the data channel;

(ii) repeating step (ii) for different values of the first decision threshold level; and

(iii) deriving the Q-value from the error ratio values.

23. An apparatus for measuring the Q-value of an optical data channel, comprising a clock extraction circuit for deriving a clock signal at the data rate of the data channel, the clock signal being used by error measurement circuitry which measures a bit error ratio in the data, wherein the error ratio is used to obtaining a Q-value irrespectively of the data rate.

24. A node for an optical transmission network for transmitting an optical signal to carry data using a given data protocol, the node comprising measurement circuitry for monitoring a Q-value of the optical signal independently of the data protocol.

25. A node for an optical transmission network for transmitting an optical signal to carry data using a given data rate, the node comprising measurement circuitry for monitoring a Q-value of the optical signal independently of the data rate.